

SYMONS'S MONTHLY METEOROLOGICAL MAGAZINE.

CCLXXVI.]

JANUARY, 1889.

[PRICE FOURPENCE,
or 5s. per ann. post free.]

MR. ABERCROMBY'S TRAVELS.*

A METEOROLOGIST might do far worse than present himself with a copy of the Hon. Ralph Abercromby's last book as a Christmas-box. It has appeared just at the right time ; it is a book entirely *sui generis*, and though there are bits in it on an endless variety of subjects (from politics to the growth of one's beard), still the object of his recent voyages and the object of the book are the same—the study of “Seas and Skies in many Latitudes.” The author might have added “and Longitudes,” for the track chart shows at least two journeys round the world. In fact, excepting the West Indies and the West Coast of America, there are few important ocean tracks along which he has not been.

In this volume the author deals not merely with cloudland, but with weather and weather forecasting as actually practised at most of the extra European establishments. Himself a careful observer and thinker, it has been no slight advantage to personally visit the chiefs of the meteorological services of the United States, of India, New South Wales, and other countries. Then Mr. Abercromby seems to always have his camera ready, whether it be to take the midnight sun from the North Cape, or clouds in the Himalayas, or the entrance to edible bird's nest caves in Borneo, or— — Well, we will let Mr. Abercromby tell the tale ; he was between New Zealand and Cape Horn.

“A top-sail had been split by a squall ; the weather was very cold, with snow or hail showers ; the sea rather high, and the ship rolling a good deal. With the assistance of a friend, who held the legs of the camera while the plate was being exposed, I succeeded in getting a good picture of a cumulus cloud, with a foreground of 21 men on the top-sail yard. They had a long job, shifting and replacing the

* “Seas and Skies in many Latitudes, or Wanderings in search of Weather,” by the HON. RALPH ABERCROMBY, F.R.Met.Soc., &c. London, Stanford, 1888. 8vo., xvi.-448 pages. Nine photographs and numerous maps and engravings.

split canvas by a new top-sail, and when they came down some one remarked that a passenger had been photographing them. 'Well,' said an old sailor, 'if he could have photographed our language, he would have made a very pretty picture.'"

It is quite impossible for us to do more than indicate the character of the book. It is a book of travel, in which the ordinary-beaten tracks receive no notice unless some exceptional meteorological phenomenon occurs; but directly that the author leaves the usual routes, we have full and life-like descriptions, whether it be of a state *re bosc* in Fiji, of the climb to Sandakphu (11,930 ft.) in the Himalayas, the tobacco plantations of Sooloo, the temples in Japan, or the observatory on Pike's Peak, Colorado (14,150 ft.).

As regards meteorology, we do not think that there is a chapter in the book which does not contain useful information, and perhaps to some it will be satisfactory to be assured that there is not a single equation, or a single table of figures from one end of the book to the other.

We think that Mr. Abercromby has carried the suppression of personal statements just a shade too far. It is all very well for him to assert in the preface, "Of adventure there is nothing in this book; there is no more adventure now in an ordinary voyage round the world than in travelling from London to Edinburgh." Without hunting up the dictionary definition of adventure, we may roughly regard this paragraph as putting coasting about among the mangrove swamps of Borneo as parallel to dining in a Great Northern Express between London and Grantham. Is that so? When a book of travels is well written, the reader becomes interested in the writer, and one wonders whether it is possible for anyone to stand the vicissitudes of climate, and of diet, and of atmospheric pressure without fever or other discomfort. But only once is the slightest hint dropped on this subject, viz., as to nausea at 14,150 ft. on Pike's Peak.

The photographic, and most of the other illustrations, are excellent, and the work is remarkably free from errors, as we have noticed only two, "Mr. Meldrum" for "Dr. Meldrum," and on p. 367 "within 85 per cent." should be either "within 15 per cent" or "85 per cent." Those who have ever seen a volume of 450 pages through the press, will understand from the above how carefully "Seas and Skies" has been printed and read. It is not every one who has Mr. Abercromby's opportunities; it is not one in ten thousand who could and would make such good use of them.

ROYAL METEOROLOGICAL SOCIETY.

The usual monthly meeting of this Society was held at the Institution of Civil Engineers, 25, Great George Street, on Dec. 19th, Dr. W. Marcet, F.R.S., president, in the chair.

Dr. G. Adkins, Mr. T. M. Blake, Mr. C. J. Bromhead, Dr. A. Newsholme, Dr. E. P. Thurstan, Rev. Dr. T. T. Wilkinson, and Dr. F. M. Williams were elected Fellows of the Society.

The following papers were read :—

1, "On the Prolonged Spell of Cold Weather from September, 1887, to October, 1888," by Mr. C. Harding, F.R.Met.Soc. During the fifty-nine weeks, ending with the third week in October, there were but four warm weeks in the north-west of England, and only five warm weeks in the south-west of England, whilst in the latter district there was not a single warm week between March 12th and October 22nd. The mean temperature of the whole period was dealt with for the twelve districts into which the Meteorological Office divides the whole area of the United Kingdom, and with the single exception of the north of Scotland the weather for the period ending in October this year was the coldest of any during the past ten years. At Greenwich the temperature during the fourteen months was below the average on 312 days out of 427, or 73 per cent., and in July there was not a single warm day, the temperature being continuously below the average from June 27th to August 6th. The means for July 11th and 12th were colder by several degrees than those for March 9th and 10th.

2, "Report on the Phenological Observations for 1888," by the Rev. T. A. Preston, M.A., F.R.Met.Soc. Vegetation was generally backward throughout the season. In the south-west of England and south of Ireland plants were earlier than usual, but not elsewhere. In February they were from one to four weeks later, and gradually gained ground till June. In the south of Ireland they were slightly in advance of the average in June and July. In the south-west of England they just reached the average in July ; whilst in Guernsey they were a fortnight later. Fruits generally were a failure, very few really ripened, and from want of sun all were deficient in flavour. Haymaking was unusually, as much as five weeks, late ; it began in July or August, and was not entirely finished till late in September. Much hay was spoilt or secured in bad condition. Straw was plentiful, and though the corn was not an average crop, the fine October enabled farmers to secure a better one than could have been expected. Roots were in many places a failure, and potatoes were very much diseased.

3, "A Winter's Weather in Massowah," by Capt. D. Wilson Barker, F.R.Met.Soc. This gives the results of four-hourly observations during December, 1887, to February, 1888. The highest shade temperature was 95°, and the lowest 68°.

ELECTRIFYING A LONDON FOG.

SINCE Dr. Oliver Lodge made his remarkable discovery of the influence of the static discharge upon the dissipation of vapour, it has often been suggested that experiments should be made upon a large scale to see whether by this means a fog could be locally alleviated—or may we say—dislodged. The atmospheric conditions now existing in London are of the most favourable character, and our own experience would suggest that the neighbourhood of Fleet-street offers the best attainable conditions for an *experimentum crucis*. The *Liverpool Mercury* thinks that the experiment would be worth trying on the River Mersey “at any expense,” and that, if successful, “the saving of life and property would be enormous.” It also suggests that “the best way to try it would be to have a large balloon sent up some foggy day, and having it connected with a dynamo.” If we may presume to offer an opinion of our own, we think a better way would be to get a good sized Wimshurst machine, mount it under shelter on the roof of a factory, or other building (where it could be geared on to some convenient shafting) and provide suitable discharging points. The whole thing could probably be done for £10. Why does not the Smoke Abatement Society take it up?—*The Electrician*, December 28th. 1888.

[If the experiment can be tried for so small a sum we wonder that our contemporary was not patriotic enough to make the attempt at its own cost. Perhaps the County Council will try what can be done.—ED. M.M.]

THE WEATHER AT CAMBRIDGE IN 1886, 1887, AND 1888.

	1886.	1887.	1888.
Mean Temperature	46°·4	45°·6	45°·6
Hottest by Day	July 4 & 21. 80°	July 3. 82°	Aug. 10. 80°
Coldest by Day	Dec. 21. 29°	Jan. 1. 21°	Feb. 24. 27°
Hottest by Night	Aug. 29. 64°	July 8 & 26. 62°	Aug. 9. 60°
Coldest by Night	Dec. 31. 16°	Jan. 1. 15°	Feb. 1. 18°
No. of Days on which the maximum was at or under 32°	13	9	13
No. of Nights on which the minimum was at or under 32°	97	106	104
Mean of Barometer	29·82	29·94	29·88
Barometer Highest	Feb. 8. 30·60	Feb. 7. 30·62	Jan. 10. 30·61
Barometer Lowest	Dec. 8. 28·10	Jan. 5. 28·79	Mar. 11. 28·60
Rainfall	inches. 23·43	inches. 15·35	inches. 18·85
No. of Rainy Days	168	162	180

Beech House.

J. NUTTER.

EXCESSIVE RIME.

To the Editor of the Meteorological Magazine.

SIR,—For the last two or three days we have had the heaviest hoar frost I ever saw, and such is every one's remark. On Saturday, 5th, and Sunday, 6th, the trees were so thickly covered with rime, that you could no more see through the branches than you could when covered with leaves in summer. The rime stood out from the branches from 1 inch to $1\frac{1}{2}$ inches, longest on the side facing the wind, which has been S.W. for some days. A constant and dense fog prevailed from the 3rd until to-day, when the sun got out for an hour or two, and it brought a good deal of the rime off the trees, covering the ground under large trees to a depth of from three to four inches. The frost during these days has been very keen. The min. shade temp. on 4th, 5th, 6th and 7th was 18° , 20° , 16° and 21° , and the max. on the same days was 29° , 24° , 25° and 31° . It has been perfectly calm during those days.

I am, Sir, yours faithfully,

JOHN MATHISON.

Addington, Winslow, Bucks, 7th January, 1889.

SNOWDON RAIN GAUGES.

To the Editor of the Meteorological Magazine.

SIR,—I think that a word of warning to those who use Snowdon gauges, at least of recent construction, may be useful. I have lately got one, which has a receiving can holding no less than 9 inches of rain. This is a good thing in itself, but I find, by comparison with my old gauge, that very small quantities of rain are rather apt to get lost in this vast receptacle, *i.e.*, out of a fall of rain which ought to measure 0.01 inch, so much adheres to the bottom and side in pouring out, that only a non-measurable quantity comes out, and so a "day with rain" may be missed. An easy remedy for this is to place inside the can a small bottle or jar, which will hold all ordinary rains, leaving the big can itself for exceptional rains, when the small bottle will overflow into it.—Yours faithfully,

G. VON U. SEARLE.

30, Edith Road, West Kensington.

[Mr. Searle is quite right, but the original design of the Snowdon gauge included a bottle as well as a can; we never before heard of a gauge which had been supplied without both; we hope that the omission was purely accidental, and if it was not, Mr. Searle's letter and this note will probably be useful.—ED.]

LIGHTNING AND ITS EFFECTS.

To the Editor of the Meteorological Magazine.

SIR,—Will you kindly allow me to add a short postscript to my letter of last month ; it is as to the sound of thunder. I attributed it to the collapse of the vacuum caused by the flash. I think that it may perhaps as well arise from the concussion of the air in its sudden expansion, as in the firing of a gun.

It also occurs to me that the sand storms in the desert, a good illustration of which is given in “Atkinson’s Tour to the Upper Amoor,” also the action of the sea in water-spouts, are good examples of the effects of upward currents.

ROBERT J. LECKY.

3, Lorton Terrace, 1st January, 1889.

“THE SPECTRE OF THE BROCKEN” IN SOUTH
SHROPSHIRE.

(Reprinted from *The Hereford Times*.)

SIR,—Being at the summit of the Titterstone Cleve Hill, between 11 a.m. and noon on Wednesday, December 26th, I witnessed a curious phenomenon. There were a few white clouds scudding just across the top, and the sun was shining through them, and the wind was fresh from S., though the direction of all the other clouds, except these few, was westerly. When I stood on the top, the sun threw my shadow some hundred yards or so over the valley into the fog ; at about an equal distance of four yards from my image in the fog was a perfect rainbow, and within, again, all round the image of my head, was a perfect halo. As my image was in the centre of the bow, I moved some distance, and the bow also moved, with the halo round my head (or rather the image of my head), so that I was always in its centre. Gradually the fog cleared, and the whole “spectre” also vanished. Soon after there was a snowstorm, with the temperature 34°.

R. P. DANSEY.

The Sheet, Ludlow, December 27th, 1888.

THE NOISE OF METEORITES.

The sounds which these bodies occasionally produce has been hitherto (*Humboldt*) ascribed to explosion. Daubrée calls this in question on account of the great rarity of such sounds and their peculiar character, which resembled rather the discharge of small arms, the rolling of a train, or the tearing of linen. Hirn shows that it is merely an intensification of the whistling of a bullet. The meteorite moves from 80 to 120 times as rapidly as a bullet, and makes consequently a louder sound.—*Public Opinion*.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, MAY, 1888.

STATIONS. (Those in italics are South of the Equator.)	Absolute.				Average.				Absolute.		Total Rain.		Aver.
	Maximum.		Minimum.		Max.	Min.	Dew Point.	Humidity.	Max. in Sun.	Min. on Grass.	Depth.	Days.	
	Temp.	Date.	Temp.	Date.									
	°		°		°	°	°	0-100	°	°	inches		0-10
England, London	77·2	19	35·3	11	64·0	44·1	42·4	68	125·3	29·3	1·18	7	5·0
Malta.....	80·1	12	52·4	1	72·3	59·3	57·1	76	140·2	45·3	1·57	5	4·5
<i>Cape of Good Hope</i> ...	75·5	3	45·2	23	63·3	53·2	...	...	...	...	8·55	18	7·5
<i>Mauritius</i>	80·2	8	63·0	23	78·5	68·0	65·1	78	129·7	51·1	·99	14	4·8
Calcutta.....	100·4	16	70·8	29	93·9	77·7	75·9	67	159·8	68·4	3·77	10	4·9
Bombay.....	...	...	...	...	...	...	...	...	...	...	...	...	...
Ceylon, Colombo ...	90·4	3, 5	74·0	11	87·1	77·6	73·3	78	148·0	71·0	16·05	22	6·8
Melbourne.....	78·1	2	40·0	17	61·2	46·9	47·3	80	125·2	35·3	3·77	15	6·4
Adelaide	84·0	1	39·8	6	65·8	50·3	46·8	66	132·7	29·9	2·12	10	5·4
Wellington .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Auckland	66·5	7a	40·0	30c	61·7	51·6	50·1	80	125·0	31·0	5·69	20	6·6
Falkland Isles.....	...	...	...	...	...	...	...	...	...	...	...	...	...
Jamaica, Kingston.....	92·2	6	68·7	21	86·1	71·8	71·8	78	...	...	22·13	...	...
Barbados	83·0	7b	70·0	10d	82·0	72·0	72·6	82	...	...	5·99	15	7·0
Toronto	74·1	11	32·9	2	59·5	42·4	41·4	68	...	24·2	·85	17	6·5
New Brunswick, Frederickton.....	77·2	25	27·0	1, 2e	59·4	38·6	37·8	60	...	...	4·46	16	6·1
Manitoba, Winnipeg ...	78·0	8	15·3	14	59·9	30·2	31·3	59	...	...	·17	9	5·2
British Columbia, Victoria	78·0	17	34·0	5	65·4	42·9	...	...	...	...	·19	4	...

a And 15. b And 24, 25, 26, 27, 31. c And 31. d And 11, 28. e And 5.

REMARKS, MAY, 1888.

MALTA.—Mean temp. 64°·5; mean hourly velocity of wind 10·0 miles. Sea temp. rose from 63°·0 to 69°·4. TSS on 17th and 27th. L on 26th. Rain and amount of cloud greatly in excess of the average.

J. SCOLES.

Cape of Good Hope.—Rainfall 4·90 in. above the average; mean pressure 0°·1 below, mean max. temp. 1°·7 below, mean min. 2°·3 above average.

W. ELLERTON FRY.

Mauritius.—Mean temp. 0°·1 below, mean dew point 0°·8, above, and rainfall 3·52 in. below average. Mean hourly velocity of wind 8·3 miles, or 1°·9 below average; extremes 21·1 on 28th and 1·9 on 29th; prevailing direction E.S.E.

C. MELDRUM, F.R.S.

Melbourne.—Mean temp, of air 0°·5, of dew point 1°·3, humidity 2, rainfall 1·69 in., and pressure 102 in. above their respective averages. Amount of cloud 2 below average. Prevailing winds N. and W.; strong on six days; greatest hourly velocity 23 miles on 3rd from N. Heavy dews on 3 days. Dense fog on 5 days. H on 3rd and 5th; L on 15th.

R. L. J. ELLERY, F.R.S.

Adelaide.—Mean pressure (30·204 in.) 0·079 in. above average of 31 years. Temp. slightly above and rainfall an inch below the average. Total rainfall from Jan. 1st to May 31st less than in any previous year since 1839.

C. TODD.

Auckland.—A wet and stormy month, rainfall 1·75 in. above the average; mean temp. slightly below the average; mean pressure somewhat above.

T. F. CHEESEMAN.

BARBADOS.—Mean temp. (75°·0) 1°·2 below the 30 years' average; wind averaged 10·5 miles per hour, same as the 15 years' average; rainfall was 30 per cent. above the 25 years' average. Evaporation 13 per cent. below the average. 7 days were cloudy.

R. BOWIE WALCOTT.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, JUNE, 1888.

STATIONS. (Those in italics are South of the Equator.)	Absolute.				Average.				Absolute.		Total Rain.		Aver.
	Maximum.		Minimum.		Max.	Min.	Dew Point.	Humidity.	Max. in Sun.	Min. on Grass.	Depth.	Days.	
	Temp.	Date.	Temp.	Date.									
	°		°		°	°	°	0-100	°	°	inches		0-10
England, London	84·7	25	43·9	18	68·1	50·8	49·9	76	127·6	36·7	2·31	20	6·9
Malta	92·1	9	60·2	1	84·1	67·1	63·5	70	146·5	53·3	...	...	1·8
Cape of Good Hope. ...	76·0	2	43·5	22	62·0	52·4	...	...	...	...	9·75	16	6·8
Mauritius	78·7	6	59·3	16	75·9	65·1	61·4	75	123·2	47·8	1·64	16	4·9
Calcutta	106·6	14	72·9	3	96·5	79·9	77·1	67	165·4	70·8	3·26	7	5·5
Bombay	93·0	3	74·0	8	87·4	79·7	77·5	83	149·0	71·8	15·76	21	6·4
Ceylon, Colombo	86·7	4, 6	73·5	7	85·1	76·8	72·7	80	144·2	69·5	9·06	26	7·8
Melbourne	66·9	29	36·2	27	58·2	46·2	44·6	76	116·4	28·8	1·19	13	6·3
Adelaide	68·2	8	39·3	4	61·1	48·9	46·8	74	123·1	29·5	2·84	18	6·1
Wellington .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Auckland	63·0	23	37·0	9	57·9	46·3	45·4	78	118·0	30·0	4·13	20	6·0
Falkland Isles .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Jamaica, Kingston	93·6	28	70·1	16	89·0	73·2	73·2	73	...	...	2·76	...	...
Barbados	84·0	4, 6a	71·0	22, 23b	83·0	73·0	73·3	80	...	...	4·98	12	6·0
Toronto	92·0	22	40·5	4	75·5	53·4	53·8	70	...	33·5	3·99	11	5·2
New Brunswick, Fredericton	87·7	23	37·5	8	72·8	48·8	51·2	68	...	...	1·47	11	6·0
Manitoba, Winnipeg ...	96·0	18	21·0	1	74·5	48·7	54·0	72	...	...	3·10	17	5·3
British Columbia, Victoria	72·0	22	40·0	21, 22	66·4	48·4	...	...	...	...	2·23	10	..

a And 7, 9, 11, 12, 13, 14, 15, 16, 17. b And 24.

REMARKS, JUNE, 1888.

MALTA.—Mean temp. 74·5; mean hourly velocity of wind 7·4 miles. Sea temp ranged from 69°·4 to 77°·0. Slight earthquake shocks on 22nd. Temp. well above the average. J. SCOLES.

Cape of Good Hope.—Unusually wet. R 5·10 in. above the average. Mean max. temp. 1°·1 below average, mean min. 4°·1 above average. W. ELLERTON FRY.

Mauritius.—Mean temp. of air 0°·1 below, of dew point 0°·9 above, and R ·34 in. below, average. Mean hourly velocity of wind 9·3 miles, 2·1 miles below average; extremes 26·6 miles, and 0·0 miles. Prevailing direction E.S.E. to S.E. C. MELDRUM, F.R.S.

COLOMBO.—TSS occurred on the 2nd and 28th; L was seen on 13 days. J. C. H. CLARKE, Lt.-Col. R.A.

Melbourne.—Mean temp. of air 2°·6, and of dew point 1°·2 above average; humidity 4, mean amount of cloud 0·3, pressure ·007 in., and R ·79 in. below average. Prevailing wind N. Heavy dew on 7 days. Hoar frost on 4 days. Dense fog on 6th and 7th. L on 18th and 19th. R. L. J. ELLERY, F.R.S.

Adelaide.—Mean pressure (30·157 in.) ·027 above the average of 31 years. Mean temp. 1°·5 above average. Rainfall slightly above average. C. TODD.

Auckland.—A showery month, remarkable for the small amount of wind. Total rainfall 7·5 in. below the average. Mean temp. 2° below average; pressure slightly above. T. F. CHEESEMAN.

BARBADOS.—Mean temp. (77°·2), 0°·5 below the 30 years' average. Mean hourly velocity of wind 9·2 miles, 3 miles below the 15 years' average. Rainfall 12 per cent. below the 25 years' average. Evaporation 8 per cent. above the average. R. BOWIE WALCOTT

SUPPLEMENTARY TABLE OF RAINFALL,
DECEMBER, 1888.

[For the Counties, Latitudes, and Longitudes of most of these Stations,
see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
II.	Dorking, Abinger	2·18	XI.	Castle Malgwyn	7·73
„	Margate, Birchington....	1·59	„	Rhayader, Nantgwillt..	8·22
„	Littlehampton	1·42	„	Carno, Tybrith	3·74
„	Hailsham	1·74	„	Corwen, Rhug	2·37
„	Ryde, Thornbrough	1·97	„	Port Madoc	4·51
„	Alton, Ashdell.....	2·45	„	I. of Man, Douglas	5·11
III.	Oxford, Magdalen Col... ..	1·97	XII.	Stoneykirk, Ardwell Ho.	2·87
„	Banbury, Bloxham	2·98	„	New Galloway, Glenlee	8·74
„	Northampton	1·73	„	Melrose, Abbey Gate ...	2·31
„	Cambridge, Beech Ho... ..	·96	XIII.	N. Esk Res. [Penicuik]	2·00
„	Wisbech, Bank House..	1·42	XIV.	Ballantrae, Glendrisaig	4·68
IV.	Southend	·87	„	Glasgow, Queen's Park.	3·95
„	Harlow, Sheering	·83	XV.	Islay, Gruinart School..	6·38
„	Rendlesham Hall	·81	XVI.	St. Andrews, Pilmour Cot	2·12
„	Diss	1·58	„	Balquhider, Stronvar..	8·32
„	Swaffham	1·16	„	Dunkeld, Inver Braan..	4·04
V.	Salisbury, Alderbury ...	2·45	„	Dalnaspidal H.R.S. ...	4·88
„	Warminster	3·71	XVII.	Keith H.R.S.	1·20
„	Bishop's Cannings	3·13	„	Forres H.R.S.	·82
„	Ashburton, Holne Vic....	8·98	XVIII.	Strome Ferry H.R.S....	6·58
„	Hatherleigh, Winsford..	5·60	„	Fearn, Lower Pitkerrie..	·79
„	Lynmouth, Glenthorne..	5·25	„	Loch Shiel, Glenaladale	10·51
„	Probus, Lamellyn	4·82	„	S. Uist, Ardkenneth ...	...
„	Launceston, S. Petherwin	3·70	„	Invergarry	3·95
„	Wincanton, Stowell Rec.	3·17	XIX.	Lairg H.R.S. ....	...
„	Taunton, Lydeard Ho... ..	2·66	„	Forsinard H.R.S. ....	...
„	Wells, Westbury.....	3·25	„	Watten H.R.S.	1·59
VI.	Bristol, Clifton	3·29	XX.	Dunmanway, Coolkelure	11·86
„	Ross	3·29	„	Fermoy, Gas Works ...	5·16
„	Wem, Clive Vicarage ...	2·00	„	Tipperary, Henry Street	4·96
„	Cheadle, The Heath Ho..	2·41	„	Limerick, Kilcornan ...	4·16
„	Worcester, Diglis Lock ..	1·67	„	Miltown Malbay.....	6·50
„	Coventry, Coundon	2·53	XXI.	Gorey, Courtown House	4·44
VII.	Melton, Coston	1·43	„	Navan, Balrath	2·90
„	Ketton Hall [Stamford]	1·52	„	Mullingar, Belvedere ...	3·87
„	Horncastle, Bucknall ...	1·34	„	Athlone, Twyford	3·76
„	Mansfield, St. John's St.	2·82	„	Longford, Currygrane...	4·27
VIII.	Knutsford, Heathside ...	2·03	XXII.	Galway, Queen's Coll...	4·17
„	Walton-on-the-Hill.....	1·61	„	Clifden, Kylemore	11·57
„	Lancaster, South Road..	3·56	„	Crossmolina, Enniscoe..	7·20
„	Broughton-in-Furness ...	5·37	„	Collooney, Markree Obs.	4·87
IX.	Shipley, Esholt Vic. ...	...	XXIII.	Rockcorry.....	...
„	Ripon, Mickley	2·11	„	Warrenpoint	5·27
„	Scarborough, West Bank	1·46	„	Seaforde	3·44
„	East Layton [Darlington]	1·41	„	Belfast, New Barnsley..	3·17
„	Middleton, Mickleton ...	1·48	„	Cushendun	4·07
X.	Haltwhistle, Unthank..	1·16	„	Bushmills	3·18
„	Shap, Copy Hill	8·12	„	Stewartstown	3·18
XI.	Llanfrechfa Grange	5·46	„	Buncrana	3·73
„	Llandovery	7·06			

DECEMBER, 1888.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL.					Days on which -0.1 or more fell.	TEMPERATURE				No. of Nights below 32°.	
		Total Fall.	Differ- ence from average. 1870-9	Greatest Fall in 24 hours.		Max.		Min.		In shade.	On grass.		
				Dpth.	Date.			Deg.	Date.			Deg.	Date.
		inches.	inches.	in.				Deg.	Date.	Deg.	Date.		
I.	London (Camden Square) ...	1.29	— .88	.43	24	9	58.9	5	25.9	31	11	16	
II.	Maidstone (Hunton Court)...	1.47	— .93	.40	25	10	...	...	...	...	...	...
III.	Strathfield Turgiss	1.64	— .38	.42	25	14	57.4	5	23.1	13	15	20	
III.	Hitchin	1.26	— .79	.25	8	13	56.0	5	23.0	31	14	...	
IV.	Winslow (Addington)	2.00	— .11	.68	8	16	59.0	4	19.0	11a	14	19	
IV.	Bury St. Edmunds (Culford)	1.53	— .62	.56	25	...	52.0	1	18.0	31	16	...	
V.	Norwich (Cossey)	1.25	— 1.07	.50	24	11	...	...	...	...	...	...
V.	Weymouth (Langton Herring)	1.93	...	.30	8	15	56.0	4	30.0	30a	7	...	
V.	Barnstaple	3.82	+ .06	.83	24	16	59.0	5, 7	26.0	10a	...	...
V.	Bodmin	4.98	— .47	.55	3	20	54.0	3	27.0	31	...	4.14	
VI.	Stroud (Upfield)	3.42	+ .99	.71	27	18	56.0	5, 6	23.0	30	15	...	
VI.	Churchstretton (Woolstaston)	2.96	+ .17	1.53	27	18	54.5	5	27.0	18b	12	18	
VI.	Tenbury (Orleton)	2.84	+ .33	1.31	27	18	57.7	5	20.0	31	14	19	
VII.	Leicester (Barkby)	1.71	— .21	.51	27	19	58.0	6	17.0	30	19	22	
VII.	Boston	1.38	— .69	.51	8	11	59.0	6	23.0	31	16	...	
VII.	Hesley Hall (Tickhill)	1.79	...	1.15	27	12	58.0	4	19.0	18	16	...	
VIII.	Manchester (Ardwick)	2.26	— .27	1.19	27	13	56.0	22	28.0	14b	7	...	
IX.	Wetherby (Ribston Hall) ..	1.91	— .30	.81	28	10	...	...	...	...	...	...
IX.	Skipton (Arncliffe)	5.94	+ .66	.88	27	18	55.0	5	23.0	31	...	...
X.	Hull (People's Park)	1.61	— .91	.77	27	15	...	...	...	...	...	...
X.	North Shields .....	.69	— 2.40	.14	25	11	58.0	3, 5	23.5	31	16	17	
XI.	Borrowdale (Seathwaite)	17.45	+ 3.72	3.55	2	19	...	...	...	...	...	...
XI.	Cardiff (Ely)	4.18	+ .27	1.16	27	20	...	...	...	...	...	...
XI.	Haverfordwest	6.41	+ 1.28	1.05	27	21	55.0	3, 5	24.6	30	15	17	
XI.	Plinlimmon (Cwmsymlog) ...	4.30	...	1.27	27	18	...	...	...	...	...	...
XII.	Llandudno	1.73	— 1.12	.33	27	18	60.0	3	30.0	31	3	...	
XII.	Cargen [Dumfries]	4.59	+ .06	.94	3	15	54.6	5	21.0	30	11	...	
XII.	Jedburgh (Sunnyside)	1.59	— .86	.39	25	13	54.0	3, 5	19.0	30	17	...	
XIV.	Old Cumnock	3.78	— .10	.67	19	19	54.0	3	16.0	29	12	...	
XV.	Lochgilhead (Kilmory)	5.66	— .52	.97	2	23	...	...	21.0	28	10	...	
XV.	Oban (Craigvarren)	5.99	...	.80	31	24	55.3	3	26.4	30	2	...	
XV.	Mull (Quinish) .....	...	...	...	...	...	...	...	...	...	...	...
XVI.	Loch Leven Sluices	2.60	— 1.06	.90	3	13	...	...	...	...	...	...
XVI.	Dundee (Eastern Necropolis)	1.85	— 1.42	.60	2	12	55.2	3	21.8	30	11	...	
XVII.	Braemar	2.95	— .48	.78	21	18	53.3	3	16.0	30	12	21	
XVII.	Aberdeen .....	...	...	...	...	...	...	...	...	...	...	...
XVIII.	Lochbroom	3.21	...	.39	25	21	...	...	...	...	...	...
XVIII.	Culloden .....	.48	— 1.36	...	...	...	55.0	4, 7	27.0	11b	8	21	
XIX.	Dunrobin	1.20	...	.24	27	8	55.5	3	25.0	30	10	...	
XIX.	Kirkwall (Swanbister) .....	...	...	...	...	...	...	...	...	...	...	...
XX.	Cork (Blackrock)	8.41	+ 3.65	2.59	21	20	56.0	2	26.0	29	12	...	
XX.	Dromore Castle	9.23	...	1.50	6	17	50.0	3	27.0	29	...	...
XX.	Waterford (Brook Lodge) ...	5.91	...	1.10	19	21	55.0	2, 3	25.0	31	11	...	
XX.	O'Briensbridge (Ross)	4.26	...	.48	31	19	56.0	6	24.0	30	...	...
XXI.	Carlow (Browne's Hill)	4.75	+ 1.24	.93	19	20	...	...	...	...	...	...
XXI.	Dublin (Fitz William Square)	2.91	+ .33	.68	19	17	59.6	3, 5	26.4	30	5	20	
XXII.	Ballinasloe	4.33	+ .85	.52	6	23	53.0	3, 6	22.0	30	20	...	
XXIII.	Waringstown	3.03	+ .07	.43	2	17	57.0	3	21.0	29	15	20	
XXIII.	Londonderry (Creggan Res.) ..	3.61	...	.67	2	24	...	...	...	...	...	...
XXIII.	Omagh (Edenfel)	3.47	+ .07	.32	31	21	55.0	3	25.0	28	15	...	

a And 31. b And 30.

+ Shows that the fall was above the average; —that it was below it.

METEOROLOGICAL NOTES ON DECEMBER, 1888.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; TS for Thunderstorm; R for Rain; H for Hail; S for Snow.

ENGLAND.

STRATHFIELD TURGISS.—The temp. at the beginning of the month was extremely high, higher than in Italy or Spain, the climatic conditions being entirely abnormal and not conducive to health. The end of the month was cold, raw and foggy. Peacock butterfly seen on the wing on the 6th. The general aspect of the country from an agricultural point of view was highly satisfactory.

HITCHEN.—There have been only five milder Decembers in 40 years.

WINSLOW, ADDINGTON.—From 1st to 9th, very mild; max. temp. on 4th and 5th, $59^{\circ}\cdot 0$ and $58^{\circ}\cdot 0$. A heavy R on the 8th caused the brooks to overflow, covering the meadows with water. A sharp frost on 10th was followed by a dense fog lasting all day, on the 11th the trees being covered with rime. The 14th, 15th, 16th and 17th were foggy. Sharp frost on 31st.

WEYMOUTH, LANGTON HERRING.—R $1^{\circ}\cdot 22$ in. below the average of nine years. Mean temp. at 9 a.m. ($42^{\circ}\cdot 6$) $2^{\circ}\cdot 8$ above the average of 16 years. Fog on 6th, 16th, 18th and 20th, and storms on 21st and 22nd.

BODMIN.—A remarkably mild December. Mean temp. $42^{\circ}\cdot 6$.

WOOLSTASTON.—A seasonable month. S fell on 27th. Mean temp. $40^{\circ}\cdot 0$.

ORLETON.—From the 1st to the 8th, the weather was cloudy and very warm, with a little R at intervals. On the 5th the thermometer registered $57^{\circ}\cdot 7$. From the 9th to 18th it was cold and dry, with severe frost, and frequent fog. From 18th to the 25th, it was warm and very rainy. The remainder of the month was cold and foggy. The mean temp. was about a degree above the average of 27 years. The R was above the average; $2^{\circ}\cdot 29$ in. falling in the eight days, from 20th to 28th. On the evening and night of the 27th, a great local fall took place, which produced on the 28th, a greater flood on the River Teme and its tributaries than that of the 13th November last, causing the loss of a great number of sheep. Fogs occurred on nine days. L was seen on 24th, 25th and 26th. The wind was very often high and gusty between 19th and 27th.

MANCHESTER.—December was an unseasonable month, with very little frost and frequent fogs. The temp. was rather high. Fog on eight days.

HULL.—The weather during the month was generally mild and calm, frequently with mist, fog or drizzle; often cloudless at night.

SEATHWAITE.—On 2nd and 3rd, $6^{\circ}\cdot 76$ in. of R fell, and in the first five days $11^{\circ}\cdot 04$ in.

WALES.

HAVERFORDWEST.—Frost on the 1st was succeeded by very wet, mild weather to the 7th; the weather then changed to fine bright skies, N.E. wind, and sharp night frost, with some fog. A change to milder weather, with S.W. winds, and large quantities of R, occurred on the 21st; this R and dampness, with unusual mildness continued to the end of the month, and the fogs were very dense during the last week. The temp. of the month was about the average owing to the min. readings being generally low. L on 21st and 22nd.

LLANDUDNO.—A fine, mild month, with occasional high winds.

SCOTLAND.

CARGEN.—The mean temp. of the month ($40^{\circ}\cdot 2$) was $1^{\circ}\cdot 6$ above the average. Sharp frosts occurred on the 10th and 11th, and on 30th and 31st. The meteorological conditions of the month presented a remarkable similarity to those of December 1887, with the exception of the R, which was $1^{\circ}\cdot 15$ in. less. Sunshine 20 hours below the average.

JEDBURGH.—The earlier days were marked by fine fresh weather, which brought the primrose into full bloom, but towards the end of the month the temp. was very variable. All kinds of out-door work proceeded without interruption.

OBAN, CRAIGVARREN.—A warm and open month; roses and wall flowers in bloom, daisies visible, and grass in growth throughout. T and L on 27th.

BRAEMAR.—A month of very dark, but soft and genial weather.

LOCHBROOM.—To the 23rd, finer weather was never seen at the time of year, and though there was a rough spell at the end, it was nothing but good natured weather.

INVERNESS, CULLODEN.—The rainfall during the month was very small, and the weather was generally fine, some days warm and sunny; very favourable for labour of all kinds.

IRELAND.

CORK.—A raw, cold and wet month, with an unusual fall of 2·59 in. of R on the 21st. There have been only three wetter Decembers during 23 years.

DROMORE.—The weather was very open except during the last two or three days, when rather hard frost prevailed. There were some very heavy gales during the month.

ROSS.—An ordinary winter month, no snow, some heavy gales of short duration, much fog, and slight frosts in the last week.

DUBLIN.—A mild changeable month, setting in with a period of warmth which was remarkable for the time of year, the mean temp. during the first week being 51°·8. Southerly winds (S.E. through S. and S.W. to W.) vastly preponderated. Fogs were prevalent in an anti-cyclonic period from the 9th to the 18th. A very sharp frost occurred on the 30th, the max. temp. being only 30°·7. There were only three gales, and neither sleet nor S was observed. On eight days the sky was overcast, on four it was clear. The mean temp. 43°·6 was, as in November, above the average (41°·1). Mean humidity 88. Mean amount of cloud 5·8. L on 27th. H on 11th.

EDENFEL.—A mild and wet month. The night frosts, although somewhat frequent were not severe, and there was no snow whatever.